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ALJ CASE #: 2019CFP00001

OSHA ID: 5-0460-18-125

In the United States Federal Court for the Dept. of Labor Administrative Law Judge Division

OSHA ID: 5-0460-18-125 } Kenneth W. Del Signore Docket #: XXXX } **Plaintiff** and possible other parties unknown Hearing Requested ٧ Nokia **Lucent Government Services**

Now and here comes before this court a matter of potentially great civic importance, Plaintiff Dr. Kenneth Del Signore, for himself and also for other possible persons affected similarly, brings the charges described herein against the above named defendants and any other conspirators yet unknown.

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Introduction

1: This matter concerns the Universal Service Fund, specifically one of the USF's four sub-programs known as the "high cost program". The high cost program is a \$4 billion dollar per year federal telecom subsidy that was started in 2003 and is paid for by fees that are added to US consumer phone bills (currently ~ \$1.50 / month / phone). The public has been told that this tax is to fund the "expansion and maintenance" of cellular data and phone service in rural areas. There have been several major legislative changes to the USF over the program's sixteen year lifetime, however despite these changes, a relatively fixed set of 1900 entities (in all 50 states and US territories) has consistently received the USF high cost program subsidy since it was started in 2003.

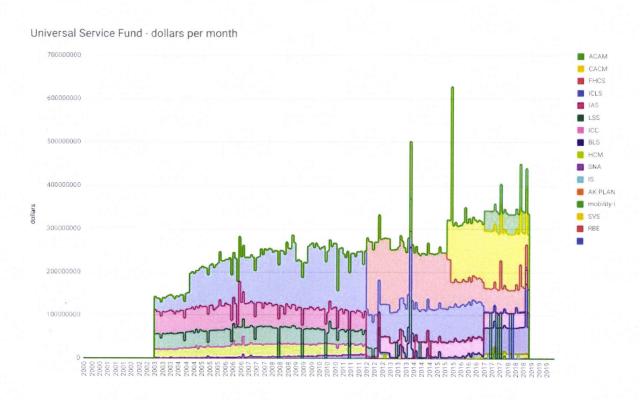
2: This complaint will detail evidence of fraud in the USF high cost program and will show that managers at Nokia and Lucent Government Services, in a nearly successful attempt to conceal this fraud, harassed the plaintiff in a secretive and egregious manner between 2010 and 2018, first because the plaintiff, on several occasions, had uncovered adverse effects in the system performance of the US 3G networks and had attempted to remediate these effects using system settings that controlled the rate of cellular phone handoffs; and then subsequently because of the plaintiff's commercial research work on 4G crowdsourced wireless network monitoring systems.

¹ https://www.fcc.gov/general/universal-service-high-cost-areas-connect-america-fund

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3: The USF high cost program was started in 2003, before 3G phones had become ubiquitous. It appears that there have been several major legislative changes to the program since then, possibly to update it to the 3G, and then 4G systems. There are 1900 entities (small telcos) that receive this USF funding and are required to annually report billable revenue to the FCC based on the amount of service they provided to consumers in their area of operations. As cellular technology has evolved from 1X -> 3G -> 4G, the service counts have transitioned to each new system, consequently, it appears that the USF may have been modified to account for the changes in technology.

3a: A plot of money versus time for the subprograms of the USF high cost program helps to highlight the different phases of the program. Large changes to the USF sub-programs are visible in 2012, 2016, and Jan 2017 by the vertical edges in the sub program funding levels.



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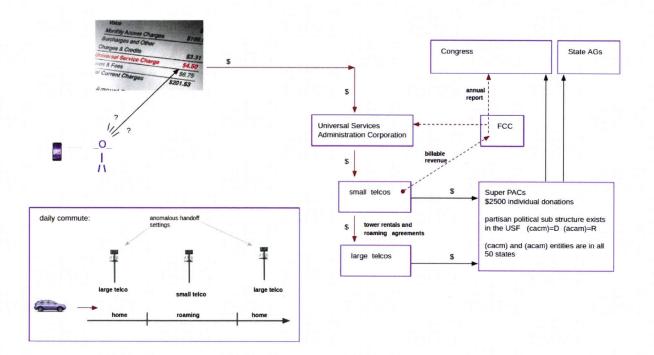
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4 The legislative changes to the USF and the various FCC orders that are used to enact and describe them are difficult to understand due to the use of a complex industry vernacular that has evolved around this subsidy system. As a result, the plaintiff's understanding of the technical details of the implementation of the USF subsidy (and the relation to the harassment) has evolved over the course of this matter, and is continuing to do so; as a result there may be inaccurate assumptions made in the following.

- 5: It should be noted that the plaintiff, in 2018, had worked as an expert in wireless network performance for 19 years and had no idea that this subsidy system existed, nor did (I think) every other long term colleague I had with the company, save for possibly one.
- 6: The current fraud in the USF high cost program appears to be in the reporting of 4G service counts to the FCC in two specific sub programs. These two programs are known as the "Connect America Cost Model" and the "Alternative Connect America Model". These programs where enacted into law around 2014; President Obama enabled the cacm sub-program by executive order in the summer of 2015 and Ajit Pai turned on the acam sub-program on his first week as FCC chair in Jan 2017. The cacm small telcos typically offer service in urban areas and the acam small telcos typically offer service in rural areas. The turning on of both programs resulted in sizeable increases in subsidy payments to the participating entities as seen in plot in paragraph 3a.

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6.1 Diagram of the USF high cost program. The FCC uses the reported revenues from the small telcos to make an annual report to congress that is used to justify the continued existence of the USF high cost program.

6A: In the 4G network, it appears that the cacm and acam sub-programs use different mechanisms to generate the required service counts on the equipment of the small telcos; which is often simply being rented from a large telco.

6B: The first method appears to be used by the cacm program entities. These entities tend to be the largest monetary recipients in each the state, as shown in paragraph 8b, and typically have coverage of one or more major cities. It appears that on sections of major highways, that subscribers of AT&T and T-Mobile (large telcos) are made to handoff to the network of a small teleco for a short section of highway, and then made to handoff back into the large telco's

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network. This would have the effect of inflating the service counts of the small telco. The small telco then uses these counts in its annual FCC 499 form (which only requires network wide aggregated total counts from the small telco) and subsequently receives USF subsidies based on these inflated service counts..

6D: A second mechanism for padding the service counts of the small telcos appears to be used by Verizon (large telco) in collusion with the small rural telcos in each state that receive acam funding. These entities tend to be more numerous but with each having a lower funding level. It appears that spectrum auction boundaries are subject to a gerrymandering effect at the FCC², whereby small populated areas in USF eligible census blocks are made into an isolated spectrum auction area, which allows Verizon to leave the populated area uncovered and a small telco to provide more desirable service than Verizon in the auction block, presumably to achieve the desired number of service counts for the small telco. There are several media outlets that specialize in covering the USF program. These media outlets have developed a specialized vernacular. The phrase "Verizon declined to participate in a spectrum auction", appears intermittently in articles from these media outlets and appears to mean that the subsidy for one of these small gerrymandered auction blocks has been given to a small telco by Verizon.

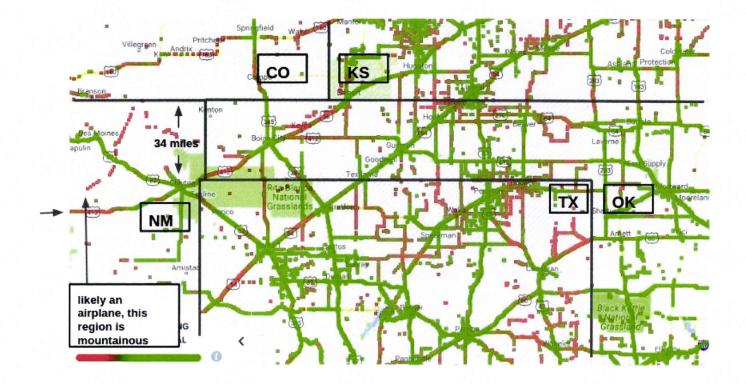
6B The effects of these two mechanisms are visible in a geographic heatmap of average signal strength, as shown below. This heatmap was made using a crowdsourced method in which a smartphone application is installed on a large number of smartphones and then these installed

² Erin Fitzgerald, RWA council, congressional testimony, 3/18. She first states the the rural carriers are essential for covering large rural areas, then later claims that they need very small geographic auction regions which contradicts her earlier statement.

 $[\]frac{https://www.womblebonddickinson.com/sites/default/files/2018-03/Erin\%20Fitzgerald\%20RWA \\ \underline{\%20Testimony.pdf}$

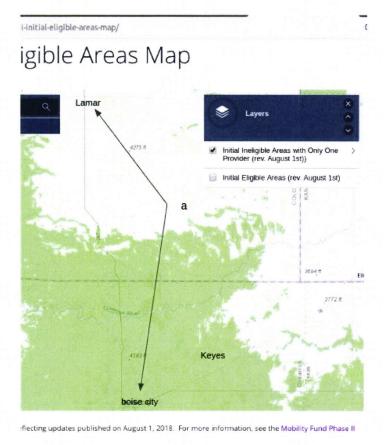
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applications all make periodic measurements of GPS and signal strength and report this data back to a centralized server. The heatmap of all aggregated measurement points then shows the locations of cities and towns and the major highways and roads in between them.



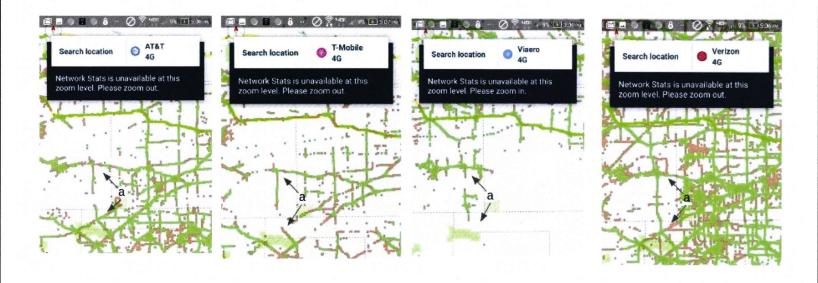
7 In the heatmap above, which shows measurements from the Verizon network, the plaintiff first noted that there is anomalously poor signal strength in the town of Keyes, OK. (follow the road indicated by arrow on left edge of image; Keyes is first town east of Boise City in the OK panhandle), which is highly unusual for Verizon based on the plaintiff's years of experience working with Verizon system engineers and architects during the 3G EVDO era. The town of Keyes OK can also be seen to be in an USF eligible subsidy area on the FCC Mobility Fund-II Eligible Areas map below:

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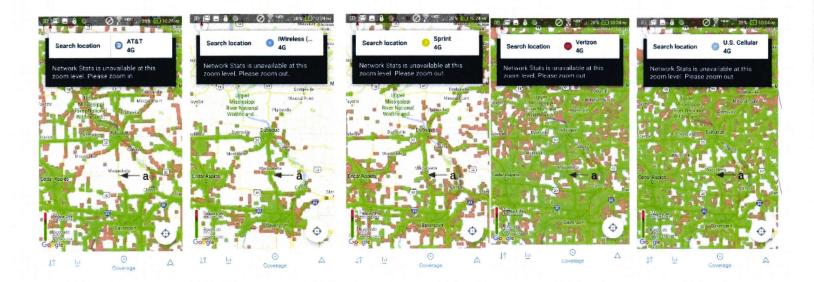
8: An example of a highway gap is shown on the four heatmap images below, in the section of highway labeled "a", which is the highway between Boise City OK and Lamar Kansas (as labeled above also). On this highway, it can be seen that AT&T and T-mobile have a gap in their coverage and that the small telco Viero is covering the gap; also from the FCC map above, the gap spans a USF eligible area boundary.

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8a: A second example of a gap is shown below. iWireless in lowa receives \$2.4M / month from the cacm sub program and has an AT&T gap setup between Dubuque and Davenport. The gap is also served by three other large telcos. This area is MF-II eligible as shown in exhibit J, which also contains several more examples of such gaps. The gaps can be found by zooming the heatmap tool out to ~200 mile display area and selecting the AT&T network. The gaps can be picked out and zoomed in on, at which point, the tool will display any small telcos that have sufficient service counts in the display area. In this manner it is fairly easy to find AT&T gaps with an associated small telco and these then have mostly all been in MF-II eligible areas.

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8b A sorted list of USF monthly cacm or acam payments to entities in lowa that receive these subsidies is shown below. Each state is typical of below, whereby the largest recipients are in the cacm program, followed by a long tail of smaller recipients in the acam program. The data in this list was compiled from a data file published by the Universal Services Administration Corporation, which is the entity that administers the USF program. The full list of states is given in exhibit K with the details of an analysis of the USAC data file.

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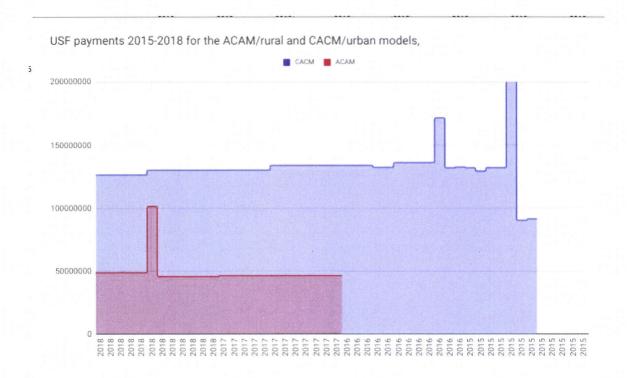
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IA	CACM ITS - IOWA TELECOM	2389380
IA	CACM QWEST CORP-IA	1491157
IA	CACM FRONTIER IOWA	353382
IA	ACAM WESTERN IOWA ASSN	190941
IA	CACM HEARTLAND TELECOMMUNICATIONS COMPANY (OF IOWA D/B/A PREMIER C
IA	ACAM BUTLER-BREMER MUTUAL	146210
IA	ACAM PARTNER COMM. COOP.	112600
IA	ACAM NORTHEAST IOWA TEL	103830
IA	ACAM SCHALLER TEL CO	102957
IA	ACAM FARMERS MUTUAL COOP	92798
IA	ACAM VAN BUREN TEL CO	91031
IA	ACAM COOPERATIVE TEL CO	82918
IA	ACAM MODERN COOP TEL CO	80560
IA	ACAM NORTHWEST TEL COOP	67905
IA	ACAM COON VALLEY COOP TEL	66591
IA	ACAM NORTHWEST IOWA TEL	66176
IA	ACAM LA MOTTE TEL CO	64394
IA	ACAM MABEL COOP TEL-IA	63005
IA	ACAM JEFFERSON TEL CO -IA	62213
IA	ACAM BREDA TEL CORP.	56722
IA	ACAM CENTRAL SCOTT TEL CO	50064
IA	ACAM SAC COUNTY MUTUAL	49612
IA	ACAM TITONKA TEL CO	49153
IA	ACAM EAST BUCHANAN COOP	48755
IA	ACAM PEOPLES TEL CO - IA	40822
IA	ACAM MECHANICSVILLE TEL	39293
IA	ACAM SCRANTON TEL CO	38885
IA	ACAM FARMERS MUTUAL JESUP	36777
IA	ACAM DANVILLE MUTUAL TEL	36095
IA	ACAM FARMERS TEL CO-ESSEX	35188
IA	ACAM NORTH ENGLISH COOP	34878
IA	ACAM CUMBERLAND TEL CO	34147
IA	ACAM MASSENA TEL CO	33168
IA	ACAM WYOMING MUTUAL TEL	31213
IA	ACAM MUTUAL TEL CO	29153
IA	ACAM COON CREEK TEL CO	27430
IA	ACAM CASEY MUTUAL TEL CO	27427
IA	ACAM ROCKWELL COOP ASSN	26492
IA	ACAM TEMPLETON TEL CO	25730
IA	ACAM ORAN MUTUAL TEL CO	24890
IA	ACAM TERRIL TEL. COOP.	23182
IA	ACAM ONSLOW COOP TEL ASSN	20470

8C This then suggests that the basis of these two USF sub programs is political in nature. The election year funding levels of each of these programs (shown below) is also suggestive of a political function. The cacm program began disbursing payments in June 2015 and two months later made a one time disbursement \$460M, which was a prorated payment to all program participants back through April 1st.



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- 8D Following the \$460M payment, there are then two one time election year payments (above baseline) from each program: \$40M in April 2016 to the urban/cacm telcos and \$50M in July 2018 to the rural/acam telcos. The \$50M acam value is calculated as a \$2.9M / month increase, prorated back to Jan 2017. Additionally the FCC in Aug of 2017 cut the cacm program by \$3.8M / month.
- 10: There has been an ongoing legal challenge in an FCC court/jurisdiction for approximately a year that is in regard to a planned redistribution of USF funds. This matter is brought by a coalition of 34 small telcos (RWA telcos) that are in the acam program and appears to be against a combination of the large telcos and the FCC. Senator(s) from rural states appear also to be in support of the RWA telcos. From ongoing media reports (exhibit J), it appears

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that the large telcos are attempting to redistribute some of the acam funds to themselves from some of the small acam telcos. These media reports, combined with interactions with Nokia council, allowed the plaintiff to understand the causes of the harassment as described herein.

Jurisdiction

13 The plaintiff filed an OSHA SOX harassment claim on Oct 10th, 2018. On this date, the OSHA inspector, Shawn Harrington, advised the plaintiff that the matter needed subpoena power and needed to be forwarded to an ALJ, and that the quickest way to achieve this was for him to deny the complaint on that day and then after 28 days, on Nov 7th, the plaintiff could request a hearing before an ALJ. I called Shawn on Nov 7th and he initiated this process by sending me a letter dated that day with instructions on how to file a notice of contest, which I followed, and has led to this complaint.

- 14 This complaint will claim standing under Sarbanes Oxley, Dodd Frank, and Illinois state whistleblower laws.
- 14a Standing under SOX is due to the fact that there appear to be many public corporations that could be exposed to fines, class action, and/or false claims lawsuits, which exposes their shareholders to considerable possible losses as a result of this ongoing matter.

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14b: Standing under D/F is argued due to the fact that defendants acted in collusion with and in the interest of the large and small telcos and are thus subject to D/F because the telcos collect the USF fee on US consumer phone bills. Section 15.A.4 of D/F defines "financial products or services" as:

"engaging in deposit taking activities, transmitting or exchanging funds, or otherwise acting as a custodian of funds or any financial instrument for use by or on the behalf of a consumer."

15 The large and small telcos meet this definition because they collect the public tax money from the USF fee on phone bills and this is done (supposedly) on behalf of consumers.

This complaint then argues that Nokia is subject to jurisdiction under D/F sec 15.A.4 because they are colluding in a superordinate/subordinate scheme with the large telcos.

16 Additional standing under SOX:

The Shannon project, as described in the allegations below, was conservatively estimated to have produced a profit of two million dollars per year for Nokia and its shareholders. When managers at Nokia colluded with other superordinate telecom companies to delay and then kill the Shannon project, they committed a fraud against Nokia shareholders. The purpose of Nokia's US corporate charter is to create value for its shareholders, not to secretly deny value to its shareholders in furtherance of some larger illicit scheme (even if that scheme is 16+ years old and has been distributing billions of dollars per year to entities in all 50 states + territories with very few questions asked and also seems to be an open secret among elected representatives).

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17 The same argument can be made for the Bell Labs project in 2013 (also described below). If this project had become a commercial product in 2013, it could have strongly competed for the ~\$50M/year revenue that the large telcos have spent on 3rd party measurements annually since then. This cost is ultimately borne by consumers. The canceling of the BL project in 2013 thus represents an earlier fraud committed against the shareholders of Alcatel-Lucent (which has since been acquired by Nokia).

There are several other possible SOX and/or Dodd Frank/SEC violations in connection with this matter: In Verizon's annual SEC filings, they have consistently referred to RootMetrics nationwide drive testing results to make the claim that they have the best network in the US. If any other commercial system were allowed to come to market, this would provide an immediate cross check of the Rootmetrics national results and may find errors in their measurement, which could have an immediate adverse effect on Verizon shareholders, which they most surely would consider fraudulent.

-I would be very surprised if Verizon did not test extremely well relative, however there is a pernicious effect in telecom where the systems are tuned in a way that increases systemwide KPIs, but that causes users with poor RF (<1 bar) to receive decreased service attempts based on their elevated failure rates; a higher system KPI is achieved, however with a real decrease in service quality to the users with (< 1 bar). The Shannon system described herein would have allowed for detailed examination and comparison of this "edge cell" treatment by each large telco.

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18a A claim of fraud could also be made by Sprint shareholders against Alcatel-Lucent/Nokia for the delayed and canceled work that was part of the Sprint Network Vision project (described below). Sprint heavily promoted the SNV project to shareholders and contracted with ALU to find and implement any improvements possible in Sprint's existing 3G network (which still provides ~50% of service coverage to Sprint customers).

19 This complaint will also claim standing under Illinois statute 740 III. Comp. Stat. 174/15: which explicitly provides for a relaxed burden of proof, ie the employee must only have a "reasonable cause to believe that the information discloses a violation of a federal law, rule, or regulation".

(740 ILCS 174/15)

Sec. 15. Retaliation for certain disclosures prohibited.

- (a) An employer may not retaliate against an employee who discloses information in a court, an administrative hearing, or before a legislative commission or committee, or in any other proceeding, where the employee has reasonable cause to believe that the information discloses a violation of a State or federal law, rule, or regulation.
- (b) An employer may not retaliate against an employee for disclosing information to a government or law enforcement agency, where the employee has reasonable cause to believe that the information discloses a violation of a State or federal law, rule, or regulation.

(Source: P.A. 95-128, eff. 1-1-08.)

20 The second ethics complaint in Sept. indicated that I would report this information to federal regulatory agencies if Nokia did not do so voluntarily, which I subsequently did. Therefore this complaint can claim standing under the Illinois statute for all events that happened after paragraph 127.

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21 This complaint can further claim standing under Illinois and Federal statute for all events prior to paragraph 127 by making the argument that the harassment was intended to prevent the plaintiff from affecting the fraudulent mechanism during the 3G era, and then in the 4G era, the harassment was to prevent the plaintiff from discovering the fraud with the Shannon project

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Parties

23 ---- Ken Del Signore, a computer scientist who came to the Naperville campus of Lucent in the late 1990's as part of a class of approximately 50 high energy physicists (post docs) from the nearby Fermi National Accelerator Laboratory. In the early 2000's, I pioneered analysis methods using C/C++ code to analyze large telecom data sets; the term now known as "big data" refers to similar such methods of analysis. These methods allowed me to make many unique contributions to the Lucent CDMA and EVDO switching systems between 2004 and 2013, several of which I list below:

24 In 2004, I co-invented and then co-designed (with Dave Rossetti) the functionality known in the 1X telecom industry as Adaptive Paging. This is a software function that has been used in the Verizon and AT&T CDMA voice systems from 2006 to present (although since 2016, 1X voice has been largely transitioned to the 4G system as "VoLTE"). The main purpose of adaptive paging was to reduce the overhead power transmitted due to paging messages by approximately 7% on the CDMA 1X forward link (tower to phone), which improved voice quality in urban areas and lowered cost of service. Another benefit was during call setup; when adaptive paging was first deployed widely in 2006, it was estimated that it saved 5 seconds of call setup time on 2 million voice calls per day in the Verizon network by increasing the first page response rate and eliminating the need for a second page message.

25 Between 2008 and 2011, I mitigated, what could have been, several hundreds of millions of dollars of potential liquidated damages claims against the ALU 3G switching system by first identifying and then fixing a major capacity problem in an early hardware version of the system.

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As late as 2007, the US 3G national network was deployed and was operational, but was only barely being utilized, and was jokingly referred to internally as "the world's best phone registration system" because most new phones were now 3G data capable, but all they would do is register for data service and then ping every two hours; without ever making a data call. However, we knew that explosive growth in data calls was coming (individual blackberries had started making 100's of data connections / hour). To stress test the new 3G data system, I wrote a simple load generator tool that would simulate the memory load from a high data call load and ran it on a switching system in a test lab. This testing revealed that the system would not meet the advertised call load capacity (that had been used over the last several years in sales contracts and that was documented in the system capacity manual). The testing found that the individual computers in the switching system would enter a "disk paging" state (familiar to users as when a computer freezes and makes a grinding sound as it accesses its harddrive). Once a single computer in the switching system was in this state above a certain percentage of time, automated retry messages would cause the entire system to go into overload and crash. Several proposals were made by multiple system architects to fix the problem and my proposal was eventually chosen after several months. I then spent about 50% of my time over the next 2.5 years leading the software project to implement the fix, known internally as "UATI compression". This project, which was successful, involved many people and at the end of the project we estimated it was a 15 headcount year total effort. Several other projects also greatly improved overload control concurrently. The 3G system never experienced the problem from disk paging in a live field site and Alcatel-Lucent never paid any liquidated damages; the 3G system then continued to provide data call service to smartphones in the US and worldwide through ~ 2013, by which time 4G was becoming ubiquitous on all new smartphones and data

call traffic began to transition to the new 4G network.

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26 By 2013 I had become a leading subject matter expert on the ALU 3G system's capacity and performance and I was the lead author of the system capacity manual. I had developed several "big data" methods for high precision monitoring of switching systems and I was planning to continue developing this work in 4G. I described this work in a March 2014 paper in Bell Labs Technical Journal. This was my second BLTJ paper since joining the company, the first was in 2007 and describes adaptive paging.

26a ---- Lucent, then Alcatel-Lucent, now Nokia: The harassment occurs at the Naperville campus of what was, since 1996, Lucent. This Illinois campus was built by AT&T in 1966 and is where much historic state of the art work in commercial telecom switching systems has occurred. This work is well known in the industry by the names of the switching systems that were heavily developed at this campus, such as the "4E", the "5E", "Autoplex" (=1x CDMA), and 3G EvDO.

Numerically, the campus had approximately 13,500 employees in 1999 when the plaintiff joined the company. Since that time, the headcount has fallen to ~2500 and large parts of the campus are empty. There is a 1 / 4 mile square parking lot, that once had shuttle bus service, that now lies dormant with tall grass growing in the cracks of the pavement (which the company has recently begun mowing).

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26c This campus was part of AT&T in 1984 when Judge Greene ordered the break up into

the baby bells because AT&T had used their monopoly industry position to secretly subsidize

the manufacture of rotary dial handsets using profits from their interstate long distance service.

27 ---- AT&T, the company Judge Greene broke up in 1984.

28 ---- Verizon, one of the baby bells.

29 ---- Lucent Government Services, A corporation that is owned by the US government.

LGS is tightly coupled to the wireless division of the former Lucent Naperville campus. LGS has

a nearby campus with approximately 90 engineers. For workers at former Lucent in Naperville,

being hired by LGS is equivalent to winning the lottery (at least in terms of retirement).

Allegations

Overview:

30 Between 2010 and April Fools Day 2016, and then again between Jan and Nov 2018, I

experienced a series of anomalous and egregious work incidents affected on me by multiple

managers and colleagues. I believe this harassment was based on two underlying causes.

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30A: The first cause is that on at least three occasions between 2010 and 2015 I had found performance problems in the nationwide 3G EVDO wireless networks due to specific system parameters that affected handoff rates. At each time, the system performance problems were of sufficient importance that I was able to get my existing management chain to approve field trials of my proposed parameter changes, however these field trials all ended with anomalous test results, and strange behaviour from colleagues, including two incidents of rather severe public harassment in 2014 and 2015 from two separate managers. I now suspect that my proposed 3G system changes would have affected the handoff rates in the 3G networks and would have altered the service counts of any small telcos that were using these counts in their annual FCC filings.

- 31 I believe the second cause of the harassment I received was due to my ongoing research work, starting in 2013, with several 3rd party companies that were developing smartphone based test systems for testing the performance of the nationwide wireless networks; followed by a similar period of harassment in 2018 due to my attempt to develop a similar (and greatly improved) test system through a Nokia business incubator program. It appears that around the spring of 2014, all commercial research and development was halted on the leading 3rd party measurement systems; presumably because these systems can detect the USF handoff mechanism.
- 32 The initial set of egregious work incidents only stopped after I had been demoted from an architecture position to a lab tester position in Nov 2015. I have strong reason to believe that the last incident was a fake job offer from LGS, sent to me subsequently on April Fools Day

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2016; initiated by Chris Miranda (who is a VP at LGS), as a victory dance on the grave of my career, four months after my demotion.

- These egregious work incidents resumed starting in Jan 2018 and continued through Nov 2018, at which time I went off role. I had continued to develop the design of a smartphone based measurement system (still completely unaware of the industry wide prohibition and the USF subsidy program) and in Sept 2017, I submitted the latest version of the project, first called PMUD then Shannon, to the Wireless Design Innovation Accelerator program. It was initially accepted and vigorously supported, due to an expected profitability of > \$2M / year, and then around the end of January 2018, it became just as vigorously "not-supported". I was never told that the project was cancelled, but instead was sent on a series of very public wild goose chases that I believe were intended to be publicly humiliating; as a warning to others to avoid this work, similar to the previous public incidents in 2014 and 2015.
- 34 It should be noted that my yearly corporate goals included the topic of smartphone based measurement topics, going back to at least 2008 (iirc), and that these goals were approved by my management chain each year.
- 35 My inability to advance in career, coupled with the public and seemingly personal harassment starting in Jan 2018, led me to take a medical leave on May 7th for a "work related stress injury". I was driving home from work that Friday and had become depressed and was very lost in thought on this matter and almost pulled in front of an oncoming car at a right turn on red. When I got home I sent an email to my manager stating that I needed to go on a disability

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leave. I remained on the STD leave for six months and then went off role from the company on

Nov 7th as described below.

detailed notes of harassment incidents:

35A: I believe there were two initial events in 2010 and 2012, followed by a series of events

between March 2014 and April Fools Day 2016. A second series of events then occurred from

Jan-Nov 2018. (dates are approximate)

2010 Early smartphones and the data explosion

36: At this time the data call load on the US 3G EVDO networks was growing rapidly. Users

were rapidly upgrading to the early smartphones. The necessary 3G switching systems and

associated cell tower equipment was being manufactured and installed as fast as possible by

Alcatel-Lucent and all of the large telcos. The internal software of these systems was also

being modified rapidly to keep up with wireless network technology that was rapidly developing

within 3G.

36A: I had developed specialized data analysis methods based on a data set known as per call

measurement data. This allowed me to examine system performance in great detail. Also

during this time, the performance limiting constraint on the ALU 3G EVDO system was the cpu

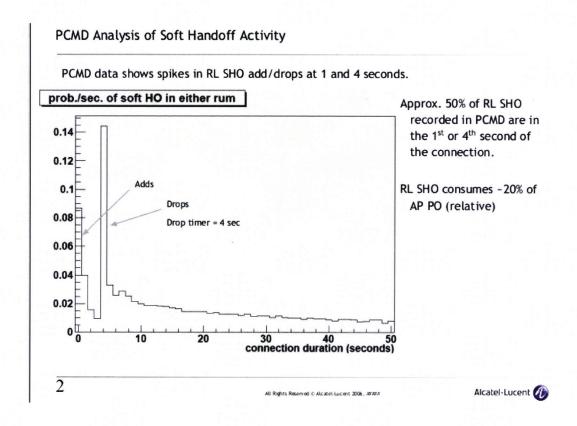
occupancy of the "signaling servers", which are the computers that handle administrative

messaging between the towers and phones. While exploring for ways to reduce the signalling

server cpu occupancy, I found an anomaly that was causing an excessive number of handoff

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operations in the field systems of the large telcos. Further investigation over a 6+ month period revealed that by adjusting a single parameter, the number of handoffs could be roughly halved and the cpu load would be reduced by about 10% (relative). This study is detailed in exhibit A, which contains the plot below that provided the first detection of this anomaly. I now believe that when I made this plot in early 2010, that it was the beginning of the end of my career.

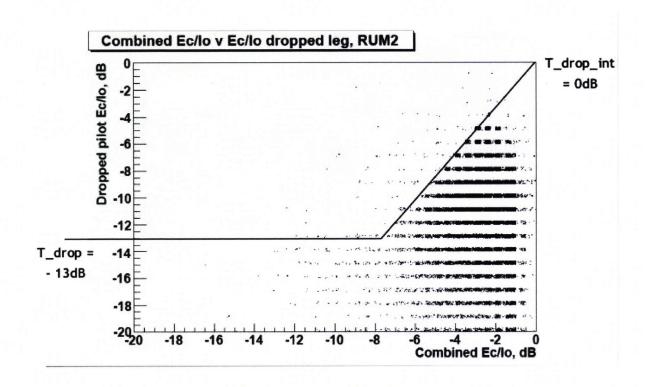


36B: Exhibit A is the powerpoint presentation that I made at the time to document my study and proposal to mitigate the excess handoffs. I worked the proposal up my management chain and was eventually connected to Amit Shah and a field trial was set up on a Verizon market.

The test was to change a parameter called T_drop_int_from 0dB to -13dB. This parameter is

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the Y intercept of the diagonal line in the plot below (the origin is at upper right corner). In this plot the X and Y axes correspond (approximately) to the signal strength of the strongest and next strongest cell tower signal respectively when a 3G phone can detect two unique signals and a "call leg drop" event occured; each point is one event and there are approximately 1M points. The EVDO term "Ec/Io" = signal / (signal + noise).



36C After the parameter change was made in the field site, I found that the number of handoffs and the cpu occupancy had not changed at all. I then downloaded new PCMD from the Verizon field site and regenerated the above scatter plot and found that it was completely unchanged, which told me that the parameter had not been changed. However, Amit could not be convinced of this. I recall the final call we had on the subject and that he tried to give me

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nonsensical explanations. I also tried contacting the Verzon team we had been working with to request that they confirm the parameter was changed and they did not respond to my email.

36D: I had worked this issue for close to a year at this point (as a background project). During this time, the underlying cpu constraint had been completely mitigated by a planned new hardware version of the signalling servers, so my initial attempt to modify the T_drop_intercept parameter was halted at this point.

2012

36E: I had been working on a feature called network load balancing and found a second technical reason to change the T_drop_int parameter. Exhibit B is a powerpoint presentation of an early proposal of this feature enhancement. I recall that there was a subsequent email chain and that it was determined that my proposal could be more easily implemented by simply changing T_drop_int to -5 dB (I recall). This proposal eventually met the same nonsensical ending as my previous attempt, this time from a different long time colleague. I believe that the common element in both cases, and those below, is that someone was being told to not let me change the parameter, and most likely that they did not know why, so that I ended up receiving strange nonsensical answers to my queries.

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~12/2013

37 A former manager, Ming Hsu-Tu, asked me to examine 3rd party wireless network

performance measurement systems, including Rootmetrics, Ookla, Agoop, SpeedTest, Open

Signal, and others. I often worked with different managers on side projects such as this. I

worked on this at ~33% time for several months and compiled an initial report, exhibit C.

37A During this interval, I interacted with data scientists from these companies and obtained

data samples from them for analysis of possible business opportunities. We could all tell that

this was a burgeoning field. This was still an active research area and we discussed various

ideas on the topic and directions that the methods and techniques could be extended in. The

RootMetrics team had just run a crowdsource experiment with 60K smartphones and had not

finished analyzing the data. They called it "dirty". I offered to look at it for them but they

wouldn't let me see it.

37 B: It now appears that around this time, there was an industry wide freeze enacted on third

party measurement systems, which explains Kevin's behavior below. This action may have

been a result of planned legislative changes to the USF. My understanding is that in 2014 the

cacm and acam sub-programs were enacted by law; it also appears that around this same

time the RootMetrics and OpenSignal test systems were frozen, evidenced by the fact that their

test methodologies have not changed since then (discussed below).

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~3/2014 The Kevin, Ming, Ken illogical meeting

38 My manager, Kevin Menke, called a meeting with Ming and I and said that I must stop working on this topic because ~ "it's too complicated and you will never be able to figure anything out from that data". He became animated and made numerous illogical claims on the call and would not back down from them. I think this was supposed to be a warning. Ming

7/2018 I learn from the manager of the DIA program (without ever communicating directly with him) that there was a related Bell Labs project, lead by Neil Bernstein's wife (Neil=Kevin's mgr), that was cancelled or otherwise did not become commercially available; and that this occurred at approximately the same time that Kevin began illogically insisting that I must stop working on smartphone based test systems

3/2014 Kevin's bicycle group meeting

might have got it, but I didn't.

39 Shortly after the above incident with Ming, Kevin asked me to prepare a 15 minute talk on my work for an upcoming group meeting that he was flying in from St. Louis to attend.

About a minute into the talk I showed a histogram of 58K throughput measurements from one of these 3rd party vendors. The histogram showed a gaussian type distribution with a long tail extending to the right, except that there was a large anomalous spike (in a single bin) present in the tail.

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opportunity to end my talk.

I began to explain my theory that a certain system parameter was set incorrectly and causing the spike. Kevin interrupted to say that he thought the spike was probably due to "somebody riding their bicycle around the block and pressing send in exactly the same place each time". This left me perplexed and slightly stunned as I stood in front of the group. I recall the sequence afterwards as me replying that there were ~58 thousand counts in the histogram and it was taken over a 7 day period, to which Kevin replied, ~"it could happen if he did it enough". I recall looking at my group members around the table and they all seemed extremely anxious. Doug Botkin was frozen with fists clenched and staring directly at Kevin. Penny

41 Kevin was delivering a very sophisticated message to the other group members, saying that myself and by extension my work was off limits. I am quite certain that Kevin did not think of this message by himself because I received a similar message two more times from two different managers over the next four years.

Bright broke the silence and said that she thought "Kevin was right" and I recall that I took the

41A I had been in Kevin's group for over a year at this point and I had probably interacted with him one on one only a couple of times in this interval, and only a couple more times in total on several group calls. I did not know him well and initially mis-attributed his behaviour; he flew back to St. Louis after this meeting and I do not think I spoke with him again for at least a couple months.

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3/2014 - 7/2015 Sprint Network Vision Project

- After the above incidents, I was assigned to the SNV project to search for ways to improve the performance of the Sprint's existing 3G EVDO network. In former-ALU at Naperville, I was one of the last EVDO subject matter experts still not yet transitioned to 4G. I was kept on this SNV 3G project for an additional 1.5 years. Several long time colleagues from New Jersey also took part in this project and it was noted amongst us that this 3G project was a career dead end but that there appeared to be strong pressure to produce numeric improvements in the Sprint network KPIs (key performance indicators).
- I experienced a series of anomalous delays to my work on this project during this time.

 The first anomalous work interaction I recall was that I had developed a theory for an improvement that first needed to be trialed in a small cluster in the Sprint network in order to be validated. This test was delayed inexplicably for approx four months.
- It was not until Dave Rossetti was brought in to lead the effort that I was able to get my field test run in Nov 2014, exhibit D. The result was positive and resulted in a ~50% reduction in the drop call rate for data calls. My test had identified calls that had finished transferring data and then dropped while they were waiting to timeout normally. If a call drops while waiting to timeout and no additional data ever needs to be transferred, then this call can (arguably) be discounted as a dropped call.

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45 Sprint officially adopted the result of my test and the corresponding parameter changes.

The same changes were then subsequently made on Sprint's Samsung EvDO switching systems nationwide. I was given an increased bonus for 2014 for this work.

1/2015 Request Denied to leave SNV to pursue smartphone app

46 After the above successful study and parameter change, I requested in an email to Kevin and Neil that I be allowed to leave the SNV project and resume working on smartphone based measurement technology. Neil denied this request in writing in a reply email, and also telling me that the SNV project was important and he needed me to keep working on it.

1/2015 T drop int (redux)

46A I then dusted off my earlier work on the T_drop_int parameter and wrote the proposed parameter study shown in exhibit E. This proposal details various technical reasons for changing the corresponding "soft_slope" parameter, . I now suspect that changing this parameter would have altered service counts related to the USF subsidy, as a result, the perpetrators of this harassment could not allow myself or the group to pursue this line of inquiry. I believe that if I wasn't already planned to be in the upcoming Sept. RIF, that I most certainly would have been after reintroducing my previous T_drop_int work.

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2/2015 The 1.5 Sigma Customer Meeting

47 I was assigned to monitor a parameter trial in the Sprint network in parallel with my

other ongoing work. The trial was done on a small test cluster of approximately 20 cell towers.

After approx four weeks of accumulating data, there appeared to be an improvement of ~5%

(relative) in one KPI, but this was only at the ~ 1.5 sigma level of statistical confidence. This

was obviously not yet statistically significant, however Neil directed that I take this result to

Sprint and attempt to convince them to buy into the parameter change. Afterwards, Dave

Rossetti and I could not figure out why Neil was making this request. Mistakes are common in

data analysis and I thought Neil had misread the data. We decided not to add it to the agenda

of a Sprint meeting that was scheduled for the next day.

48 At our next weekly team meeting, Neil asked how Sprint reacted to my data. Either

myself or Dave told him that we did not show it to them. At this point Neil became suddenly very

angry and started yelling on the group call, to the effect ~"I told you to do it so why didn't you do

it!!" After a strained silence, I replied ~" that we could say that the data is trending in the right

direction and we feel it will continue to do so"

49 Dave Rossetti and I then subsequently met with a single engineer from Sprint in a

call scheduled for this purpose. Dave said that we were going to recommend this parameter

change, to which the Sprint engineer replied ~"that's great Dave, show us the data and we will

decide". There was silence and I think I was supposed to share my screen and talk, but I had

nothing to add and we ended the meeting (in under 5 min) without ever showing the Sprint

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engineer our 1.5 sigma data. After several more weeks of data accumulation, the 1.5 sigma result disappeared and we never pursued this parameter change further.

50 I now believe the purpose of Neil's illogical behaviour was to publicly ostracize me for an obviously incorrect reason. This is the same message that Kevin delivered 12 months earlier with his bicycle comments at his group meeting. I believe the message was meant for the other engineers and it was to avoid working with me and specifically my work with the EVDO handoff parameters.

3/2015 - 6/2015 | I duplicate my 2010 test results

50 A: My T_drop_int parameter trial was however allowed to move forward and I quickly duplicated part of my results from 2010, namely that after Amit Shah had the parameters changed on the Sprint test cluster, that there was zero change in any KPIs. Exhibit F is a status summary from 4/2/2018 and shows that my trial produced no discernable change to system KPIs. Following this status summary, I downloaded the current day's PCMD from the test cluster and found that the soft_slope parameter *had* in fact changed. My study then proceeded through a series of test intervals and was completed in June with exhibit G, in which I conclude there was no discernible change in KPIs even though my PCMD analysis was showing that the softslope parameter was being changed.

50B: Based on the previous context, I would speculate that the parameters could have been changed for a short interval to allow PCMD data to be collected, and then the parameters could have been changed back (pcmd data files were hourly and I usually only looked at one at a

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time). This is purely speculative, however I can state unequivocally that in 5+ years of studying various side effects of this handoff mechanism, I was never able to get the parameters changed and that this was last study I did on the topic.

3-4 /2015 The "Amit you know damn well it will work" Meeting

- The SNV team continued to meet weekly and during this time, in parallel with other work I was doing, I helped developed an idea for a small software change (referred to as a "feature") to the switching system that would give an expected ~30% reduction in one of the KPIs (either blocks or drops). Unfortunately I have not been able to access the email that contained the details of this feature. I recall that I proposed a test to validate some particular detail and that, I needed another engineer (Xinyu Huang) to run a field test in an RF hole (< 1 bar) using a tool called QXDM, which I did not have a license for.
- The test plan was agreed to during our weekly meeting, however, Xinyu then delayed running the test each subsequent week for several weeks. The team had been under enormous pressure to improve the Sprint KPIs for over a year at that point and I had a feature designed that would provide a substantive improvement, and yet, I could not get my colleagues to run a simple test to validate it.
- 54 After about four weeks of delay, I became angry with the team on the weekly call. I recall that there was a strained silence as I demanded to know why my test was being blocked.

 Amit Shah attempted to defuse the silence by saying "Ken, I don't know if it will work", to

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which I exploded in response "Amit, what are you talking about, you know damn well it will work".

55 I have worked with Amit and Dave for ~ >15 years and have the utmost respect for them professionally. I feel they were under some form of pressure and this explains the anomalous behaviour that occured during this interval. After this incident, Xinyu collected the data and the feature design was validated. We submitted the feature design to IPRC in India (where 3G development headcount had been moved).

5/2015 IPRC cancels the project

57 The next step in the feature process was for IPRC to review and estimate the design. Dave and I received a personal email from a Director at IPRC (whose name I cannot recall) stating that he had decided not to pursue development of the feature. Feature work is complex and there are many factors in deciding to whether to develop a feature or not; it was also late in the EVDO lifecycle with only maintenance (bug fix) work ongoing. I did find the decision surprising, given that the SNV project had driven so hard for any improvements in the system and the feature would have been a small development project.

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9/2015 RIFed, email lost, Kevin leaves fingerprints

60 I was RIFed (laid off) on 24 Sept 2015. At the Thursday RIF meeting, I was offered a lab testing position. I declined, stating that I wanted to look around externally. The normal RIF procedure is for the manager to confiscate the employee's laptop at the RIF meeting. I asked if I could take my laptop home to copy files and return it the following Monday. Kevin agreed and I walked out of the meeting carrying my laptop.

I believe that when I declined the demotion and walked out of the RIF meeting with my laptop, that this caused Chris Miranda, and/or others, great concern that I was planning to file some form of wrongful discharge lawsuit and that they instructed Kevin to retrieve my laptop and delete my email from it, which could be a SOX 802 violation.

At this time, I was still unaware of the connection between the harassment I had received and the EVDO handoff parameters (and the USF subsidies), but had I filed a wrongful discharge lawsuit and subpoenaed Neil Bernstein's email, based on his unusual behavior during the SNV project, then I suspect I would have discovered further compromising information related to my study of the EVDO handoff parameters that could have led to the USF subsidy scheme.

63 Kevin called me at approx 4:00pm the same day and said "the HR woman needed my laptop first thing in the morning on Friday and could I bring it in?". I complied and gave my laptop to the HR contact Friday at 8:00 am at the front desk. I asked the HR contact if she could

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accompany me into the building so that I could retrieve a soldering iron from a lab. She agreed, but said she first had to give my laptop to someone. She left me unattended for several minutes inside the building and returned without my laptop.

64 After two months, while still on payroll, I could not find any external job leads and I inquired with Jamie Wiegel if the lab tester position was still open. It was and I returned to work in her group.

65 When my laptop was returned to me, Outlook would not start. I called the help desk and they determined that the outlook.pst file (which is the inbox) was missing. The help desk technician created a new outlook.pst file and Outlook would then start, but the 1.5 years of email that was in my inbox was lost.

66 At the time, I had asked the dept secretary, Trish, if IT had done anything to my laptop and she told me that it had been in her cabinet for the whole two months.

- 8/2018 Kevin was RIFed by Neil in Aug and I spoke with him by phone about a week afterwards and had the following exchange: "Ken: I think Neil got nervous when I didn't take the lab job and deleted my email. Kevin (tip of tongue): I don't know when he could have done that because I gave your laptop to Trish first thing in the morning and she put it right in the cabinet"
- From Kevin's statement (which I wrote down immediately after our call) we can conclude that he stayed the night in Chicago after my RIF meeting (before flying home to St.

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Louis) and that he took possession of my laptop Friday morning after I had given it to the HR contact and then gave it to Trish at some later time.

67-70 One way to access the hard drive of a windows PC that is locked is to remove the hard drive and plug it into a second PC using an external hard drive cable. I realized that if Kevin had deleted my outlook.pst file using this method, there would likely be latent fingerprints on the inside case of my laptop. This laptop had been returned to me in November 2015 and I have used it for work ever since.

71 I subsequently partially disassembled the laptop case and dusted for latent fingerprints. I found several partial prints and a thumbprint on the inside of the plastic case. Kevin would have also likely had to purchase an external hard drive cable that Thursday night, in which case there may be a record.

72 If my theory presented above is correct, then there could be corporate officers that are subject to prosecution under SOX 802: Section 802(a) of the SOX, 18 U.S.C. § 1519 states:

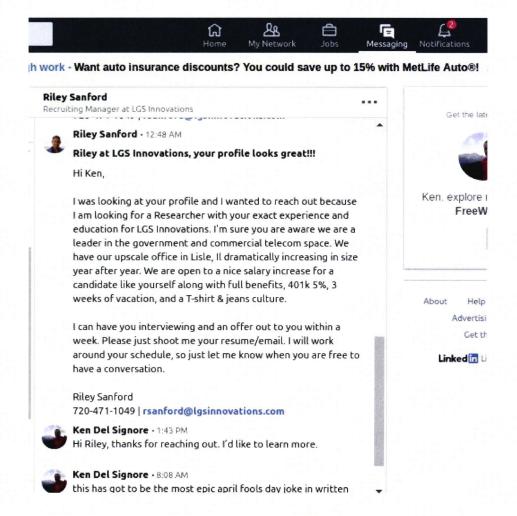
Whoever knowingly alters, destroys, mutilates, conceals, covers up, falsifies, or makes a false entry in any record, document, or tangible object with the intent to impede, obstruct, or influence the investigation or proper administration of any matter within the jurisdiction of any department or agency of the United States or any case filed under title 11, or in relation to or contemplation of any such matter or case, shall be fined under this title, imprisoned not more than 20 years, or both.

72A I had made a recent backup of my outlook.pst, but I have since found it to be corrupted, so now I think that Kevin's mission did in fact deny me my email from this period.

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April Fools Day 2016

73 The screenshot below is of an email I received on Linkedin on April Fools day at 12:48 am from an LGS recruiter's account. This recruiter's linkedin profile indicates he lives in California. I had applied to all open LGS jobs when I was RIFed six months earlier. I also used to send April Fools day jokes company wide (before it was cool), but I have not in about 10 years. At that time, Chris Miranda was a manager at Lucent and I worked near some of his group members and I had many passing interactions with him.



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My assumption is that when I turned down the lab job at the RIF meeting, that this was unexpected and caused great concern to the perpetrators of the USF scheme that I would discover it through email records, and that this caused them to panic and instruct Kevin to delete my outlook.pst file. Then four months after my safe return and demotion to the lab job, Chris Miranda took the occasion of April Fools Day to send me the above message. The plaintiff notes that this was an extremely good April Fools Day joke at the time (given the context); and also that it has aged even better (given the change in context).

76 If Chris obtained Riley's login and password from him, he could have logged into Riley's account to send this message to me at 12:48am. If that login occurred from Chicago, then Linkedin will have a record of the city, state, zip code, and IP address used to login to Riley's account that Friday morning. Depending on the IP address, the street address may also still be available from the ISP.

12/2018 this linkedin message now appears three times in the plaintiff's linkedin email display, which may indicate that its sql database record has recently been manually touched and inadvertently altered.

77 Nov 2015 - Sept 2016 I had been demoted to a lab test group, to the position of "tester". It should be noted that although this was considered a demotion by company norms, it is a well

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known industry fact that testers are the generally the most important engineers in the software development lifecycle process. Immediately upon joining the group I was advised by my new group members that significant headcount cuts were planned (the testing work was being moved to China and Poland) and that I should start looking for other positions in the company immediately. At this time, I was slated to work on the 1X to 4G voice transition (VoLTE) and it was felt that this effort would last at least three years, so I was at least temporarily safe. The VoLTE transition turned out to be relatively trouble free and within about 12 months the main project appeared to be finished and the standing meetings became intermittent, as needed, and then eventually stopped.

- Nov 2016 After the VoLTE meetings and associated test work stopped, I was given no further work assignments. At this time I compiled a report on several possible "big data" projects that I could do in the lab based on my work done in the 2014 BLTJ paper and since. I met with my manager and my tech team lead and discussed these projects but received no further feedback from my manager.
- Dec 2016 March 2017 During this time I applied to every open internal position that matched my background, including software developer and tester positions. I received no replies to any of these applications from any hiring managers within the wireless division of the company. There was one Bell Labs manager that had been advertising a technical writer position (for several months) which I lobbied for, but was eventually told it was only open local candidates in NJ.

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March 2017 I was hired by Dave Snyder in a different division of the company, then known as Applications and Analytics. Dave and I had worked closely together for several years in the early 2000s, just after I joined the company and then had lost contact. At that time I was working as a software developer on the 1X system and Dave was a *very* good software tester who found, and alerted me to, many flaws in the 1X system. Dave had become a manager in the new A&A division of Nokia and recognized my name when I applied for an open position he had advertised. The position was a service desk job working on what is known as a "cloud" server farm; which used to just be called a server farm. This so called "cloud" technology, and the new A&A division, was where all the buzz was in the company and several long time colleagues had transitioned from wireless to A&A. Even though Dave's job was a service desk position, I expected to be able to advance from it as I had done when I first joined the company. Furthermore, I was not being given any significant work to do, so I felt I would be RIF-ed if I stayed in my current position much longer.

81 April 2017 I held two 1 hour meetings (after leaving wireless) to present the results of work I had done with my team members in the wireless test lab department over the period Dec16 - Mar17. During this time, since no work was being assigned, we fleshed out various wireless testing ideas, including some that would become part of Shannon. During this time I developed a simple extension to the single C++ class that is used in my 2014 BLTJ paper. This extension allowed for the easy aggregation of high rate data of complex nature and was generally applicable to any large data set, so there were many engineers interested in it. The two presentations on the subject were both well attended by many engineers and long time colleagues from Naperville that were still working in wireless.

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Sept 2017 The Shannon Project

82 This project was submitted to the wireless DIA program 9/2017 in response to a company

wide solicitation for business proposals. The original app idea was a background process

running on the UE (smartphone) to passively collect anonymous user generated data for

Machine Learning/Al research. Users would be offered a discount on their phone bill to install

and run the app.

83 The DIA coach (Michael Delafachell) asked if there were any other profitable uses of such

an app. I knew of the ~\$40M/yr revenue of RootMetrics from my earlier work and Michael

asked that I look at adapting my app for the RootMetrics market.

84 After several hours of reviewing my notes on the RootMetrics system (exhibit C) and their

business model (which had not changed in 4 years) it became immediately obvious that the

RootMetrics business model could be easily challenged with a crowdsourced smartphone

based app that passively measures user generated blocks, drops, and throughput counts, as

described in Exhibit H.

85 Numerically, RootMetrics was collecting data on 1.6M connections per year on each of the

four large telco's networks. They then offered subscription access to this data to the four large

telcos individually for approx \$20M/yr; they currently have Vzn and one other large telco

according to a recent annual report of their parent company, IHS Inc. A key benefit of the

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RootMetrics data subscription is that it allows a subscribing telco to see the performance of its competitors networks.

86 In contrast, the Shannon system was estimated to collect 25M connections per <u>day</u> and we could have offered subscription access for approx \$1M per year to each of the four large telcos.

In early Jan 2018, the system (then called PMUD for passively measured user data) was designed and ready to begin development. At approx the end of January, I believe that my project was silently canceled because of the prohibition against such systems. My theory is that the project had been approved for funding by the DIA program managers based on its obvious merits, and then, right before the project was funded, someone familiar with the USF scheme must have seen it and had it killed.

88 Over the next two months I suffered another series of anomalous public events. I was not told the project was canceled but instead tasked with a series of wild goose chases by Michael Delafachell and two Nokia business managers in Helsinki.

This series of events occurred semi-publically and was watched closely by many of my former colleagues, who had also witnessed my career decline since 2013. In early January (I think before the cancellation), I was instructed to "add one or two more team members". I then discussed these roles with several people who had been following the project. They were enthusiastic about the opportunity and subsequently followed the project's progress closely as the wild goose chases unfolded.

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90 The first and last communications I that had with Michael Delafachell during the goose chase period indicated to me that was some serious anomaly occurring related to this matter and that I would likely be forced to leave the company as a result. As described below, I learned from these communications that Michael had not read any of the material I had generated during the two month long wild goose chase period, which indicated to me that he had known the project was irrevocably cancelled in late Jan.

91 Michael's first wild goose chase question was "how are you better than OpenSignal?". This question was delivered by Michael at a large meeting in the Naperville "Garage" meeting facility in early February, when the project was still called PMUD. It appears that Michael knew that the project was irrevocably cancelled in Jan, yet allowed me to hold this meeting. At this meeting he also said that the project needed to work on its "business model". Numerically this makes no sense; the PMUD design would allow us to offer a data service similar to the RootMetrics service, which they charge \$20M / year for and currently have two subscribers (Verizon and one other). Importantly, we can offer this service for approx \$1M/year, and it would have three orders of magnitude more data and provide 24/7/365 nationwide coverage. Michael, who only a few weeks earlier was excited about the project and had told me to add two more team members, was now completely unimpressed by these statements and held firm that the business model was a problem.

92 However, his OpenSignal question led me to re-examine my 2013 notes on OpenSignal and SpeedTest and this led me to make considerable improvements to the PMUD proposal and

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rename it Shannon. In particular, in PMUD the end user had no visible data displays. All of the data was aggregated and utilized at a central server. By reviewing the OpenSignal and SpeedTest web sites, I realized that if we expose the measured data to the users, this would create many interactive displays and it would likely be a popular app, as are OpenSignal and SpeedTest. By exposing much more advanced information relative to SpeedTest, I expected that the app could have a similar large online following. Alarming mechanisms for detecting service degradations could also be greatly improved by using the smartphone to trigger on local changes in service quality from historic trend data. There would also be a poke-e-mon go type display that would allow users to find and map what are known as "RF holes" (Exhibit H, pages 2 and 10).

- I assembled all of this new material into a new deck, renaming the project Shannon and sent it to Michael. He continued to delay the project and eventually handed me off to a Nokia business development manager in Helsinki, Petri, who recommended that I read the book "Blue Ocean Strategy". Petri explained that this 2005 book proposes that corporations are like sharks and that when sharks fight over food they turn the water red with blood, therefore, corporations should search out only Blue Ocean Revenue Stream Opportunities.
- 94 By the end of March, the Helsinki objections were reduced to trivial requests such as "can you cut your 7 page presentation down to 5 pages?". I then abandoned my effort to pursue the Shannon project through the wireless DIA program. I had become depressed and highly affected by the traumatic stress of these incidents, the effects of which included unsatisfactory work performance in my service desk position. In the month of April I submitted the Shannon

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project to the First Annual Noia Al Conference in Helsinki and was expecting an answer by May 7th, but I had otherwise given up on the project.

During this time, what I believe is a blackballing incident also occurred. Nokia has an internal employee forum called Yammer. There is a subgroup devoted to artificial intelligence and neural networks that is active with many posts on state of the art work in the field. During ~March-April, one senior Nokia researcher posted a weekly series of fundamental computer science questions, which were referred to by the week number that the question was posed in. Employees were invited to publically contribute answers to the questions on the yammer forum, and each week the senior researcher would pick the best submission and announce it.

The week 2 problem turned out to be profound and went unanswered for several weeks. It had stuck in my head the whole time and I was eventually able to write a C++ program that solved the problem. It implements a Hebbian sorting mechanism that I have not seen described before. I submitted this program with a powerpoint deck that described the solution.

97 To my surprise, the week 2 award was subsequently given to another Nokia researcher who had correctly surmised some properties of the solution and written a monte-carlo simulation that generated some related scatter plots (but not solved the problem). I had actually submitted a working neural network that solved the problem and this solution was not even mentioned. I subsequently emailed the senior Nokia researcher running the contest to inquire about my solution and I received no reply.

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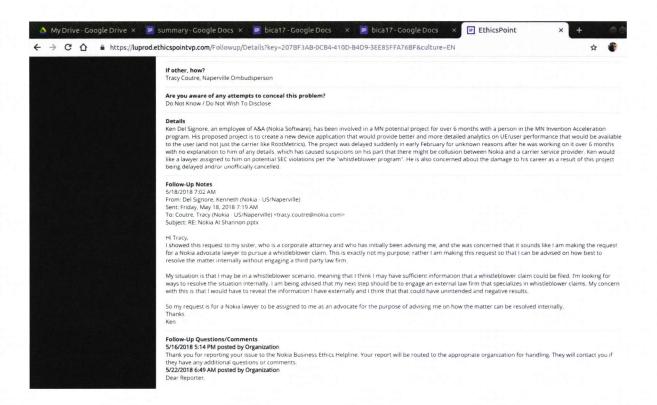
98 On May 7th I went on disability as described above. On approx. May 12th, I received a late notification that the Shannon presentation had been accepted to the Nokia AI conference in June in Helsinki. Following this, I contacted Michael to see if the project could be moved forward. I wanted to know if I was throwing rocks in the ocean by attending the Nokia AI conference and showing my work. Consequently, we held one final meeting in mid May where he inadvertently revealed to me that he had not read any material I had generated since the first wild goose chase question in early Feb. He did so by asking me the very same question ("how are you better than OpenSignal?") from his notes, as if unaware of the significant changes that had occured since January, that were prompted by the exact same question, and which I had thoroughly described in the Shannon version of the project. I responded with surprise that there were "seven pages in the deck about that". Michael quickly caught his mistake and responded with "well let's look at the deck then". We then read through the Shannon deck [Exhibit H] and it was clear to me that he was seeing this information for the first time.

In addition to the RF measurement potential of Shannon, there are many potential machine learning/Al uses for the app. The presentation in Exhibit H contains several proposals that could be affected with the Shannon system, one of which is a an app that uses a deep neural network and low resolution images from the front camera to discriminate between driver and passenger and then uses this information to prevent texting while driving, but not texting while riding (ie not in driver's seat). These economic/societal benefits are not being realized due to this matter.

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5/2018 - 10/2018 Disability

100 Upon going on disability, I filed an initial ethics complaint below. At the time I did not know for sure the reason why the Shannon project had been squashed or that it was related to the events of 2013-16. The consensus view of those familiar with the project was (incorrectly) that it would threaten the RootMetrics national results which showed that Verizon consistently has the best performing network in the country.



~1 June

101 On the 3rd week of my disability I met with the Nokia compliance council. I discussed with them details of the Shannon project, the wild goose chases, the fact that Michael had not

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read any material I sent him after Jan, and the RootMetrics theory; I also raised the issue that Neil had tried to get me to lie to Sprint regarding a parameter change (1.5 sigma meeting).

~7 July

After 5 weeks, Nokia council scheduled a follow up meeting. At this meeting they first recited my story back to me, and then told me that they found that the company did not collude with Vzn to squash my project (ie the RootMetrics theory). Regarding the 1.5 sigma meeting they told me that some of the people involved had left the company and they were still looking into it.

As an excuse as to why my project was cancelled, I was told that the DIA manager said there was a similar project done at Bell Labs four or five years ago and they had decided not to pursue the technology, but that I was "welcome to resubmit my project to the DIA program when I had addressed the financial and technical concerns that I was given".

I had heard two previous excuses from this same manager (both relayed to me through Michael during the wild goose chases); each of the three excuses was different except that all three started with "The Bell Labs Project...".

This caused me to review my notes from 2014 on the BL project and I found that it also used passive measurement techniques similar to my proposal for the Shannon project, which meant that its designers would have known that it could easily challenge the RootMetrics \$50M+ annual market. The fact that the BL project had not become a commercial product led me to believe that it had also been squashed. Additionally, a colleague had recently told me that

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Neil's wife had lead the project, and with the information I had just learned in paragraph 103, I now knew that the approximate time of the project was the same time that Kevin began his illogical behavior.

~14 July

106 I requested another meeting with Nokia council regarding the connection between Shannon, the BL project, and Kevin's illogical behavior in 2014. We held two meetings because the senior Nokia council had to miss the first meeting. At the second meeting, Nokia council would not divulge any further details, but they did agree to a constructive termination agreement and they scheduled a meeting for myself with another lawyer from HR to discuss a dollar amount.

~21 July

107 The HR lawyer that I subsequently met with was from a 3rd party HR subcontracting firm and had no background knowledge of my matter and asked "what are your human resources concerns?". I told the HR lawyer that I was told by my sister Patricia Williams, who is a corporate lawyer, that the norm for executive constructive termination agreements is between 1-3X of annual salary, depending on the severity of the underlying circumstances, of which mine seemed to be severe. However, in cases of harassment, if the underlying reason for the harassment violated federal laws, then federal whistleblower laws could apply.

108 At this time I still thought (incorrectly) that the reason my project was squashed was related to RootMetrics and Verizon's advertising claim. Based on my (weeks old) understanding of the various federal whistleblower laws, I told the HR lawyer that if my Verizon theory was

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correct, my case could be an SEC violation for "withholding information that a reasonable investor would want to know" and I described several case files on the SEC website that had total fines >40X.

~23 July

Following this meeting, I met again with the Nokia compliance council and was told that they where proceeding with the termination agreement but had to first get it approved by another individual. Then I was told ~"but there is simply no way we can do 40X", and then the meeting was quickly ended without myself getting to respond. It seemed to me afterwards that the HR lawyer had simply written down the largest number she had heard in the meeting and passed that on.

- 110 Following this meeting, Nokia council ceased responding to me. After several weeks, I contacted several external law firms regarding my harassment case. I learned from these firms that my RootMetrics theory would be a Federal Trade Commission violation and that the federal whistleblower law for FTC violations has been stuck in Congress for the last five years (passed Senate 1/2018), therefore I would not be able to get contingency based legal representation and there would not be any strong threat of litigation to the company. Unfortunately, the firms I spoke with were specialized in Qui Tam and SEC cases and did not alert me that I could pursue the matter under OSHA/SOX/DF. As a result, I did not become aware of my potential OSHA legal remedies (ie this complaint) until early October.
- I was also advised (correctly) that a five year long harassment and collusion case over a false advertising scheme does not sound plausible. My remaining legal option at this point

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seemed to be a workplace harassment suit filed locally in Naperville under Illinois law, but I would have to pay hourly legal costs up front.

Approximately five weeks after Nokia council stopped responding to me, I raised this concern with my disability advocate nurse, Christy G., and she passed this information up her management chain which (I think) caused Nokia council to set up another meeting on August 23rd.

Aug 23rd:

113 At this meeting, they told me that they were closing my ethics complaint because they did not find collusion between Vzn and Nokia over the RootMetrics advertising claim. They seemed focused exclusively on these details, as I had described them in the first meeting with Nokia council in May. I was told that they could not do any kind of termination agreement but that I could have a RIF package if I wanted it, to which I responded "yes".

However, from this meeting, I was left quite convinced that my RootMetrics theory was incorrect. Nokia council emphatically repeated the statement ~ "it is not collusion with Verizon over Rootmetrics" four times during this meeting; an action which I felt might have had a meaning. This led me to review my notes and initiate more discussions with others. After one or two more days of this additional discovery, I uncovered information about a semi secret measurement tool made through the industry standards trade group Telecommunications Industries Association, which has 270 member companies. I learned that the TIA tool also used passive techniques, similar to the Shannon and BL designs, and how it was developed

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under non disclosure agreements and I was also told by a colleague ~"we're not supposed to talk about it".

115 I had also seen the Ars Technica story about the OK co-op lawsuit (about a week earlier) that detailed the 477 challenge lawsuits, and learned of the relation to the Universal Service Fund and the MF-II program. The links in this story lead to a 2018 congressional testimony of a council for the trade group Rural Wireless Association in which the so called Mobility Fund II 477 mapping system is described. It appears that the four large telcos each use the TIA tool to measure their networks, and then (separately, using undocumented procedures) turn this data into 477 maps which are submitted to the government and used by the FCC to determine where USF subsidies would be best deployed (supposedly). [Exhibit J] has further analysis.

116 This led me to the epiphany that the (billions of dollars per year) USF MF-II federal tax subsidy program was the source of the 5 years of harassment; and that **does** sound plausible.

I had been aware of my career decline for many years but did not understand the cause of it. When I learned in June that the events that started in 2013 were all connected, it felt as if a ten pound weight had been lifted off my head, that I hadn't known was there. However, since June I had still thought that the matter was an advertising scheme. Now I had just learned that it was not an advertising scheme, but rather it was related to billions of dollars in subsidies and that there are likely many people who are illicitly benefiting from these subsidies, and that I can prove it. The thought occurred to me that if I were to suddenly die, a lot of problems that a lot of people are going to have would not occur. As noted above, at this time I was still unaware of my potential OSHA legal remedies, therefore I decided that the best course of action was to

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establish a witness list of people internal to the company and begin emailing the evidence I had and was continuing to develop.

Aug 27th

Over the week starting Monday Aug 27th, I began sending out daily updates of my new discovery to the witness list. This information was completely unknown to everyone on the witness list, all of whom each have decades of telecom experience. There is no one that I know from Nokia that was aware that the distribution of the USF subsidy was being affected with a tool secretly made by the TIA; the mere existence of the TIA tool was only known to one colleague and it was a single sentence of information about this tool that allowed me to understand this matter further.

119 Also during this week, my daily entireties to Nokia council for a further meeting (to continue discussing the constructive termination agreement I had asked for at the first meeting in June) went ignored each day until Friday morning, Aug 31st, at approx 6:50am, when I recalled the April Fools Day communication from LGS in 2016 and sent a screenshot of it to the witness list, wondering aloud in the email if it was related?

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emails about an ethics complaint that had been closed.

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Aug 31st - Friday - threatened by corporate officers for engaging in a SOX protected activity

120 I believe the LGS April Fools Day email provoked a panicked response which resulted in my getting a call from Christy several hours later. She seemed to me in an urgent manner and mood, and she conveyed to me the statement ~"they said tell him to stop sending emails to everyone". Christy, who has been a great help but not exactly easy to get a hold of quickly on administrative matters, started the call with an unrelated administrative question, which I'm assuming was coached. She then changed subjects and relayed to me that she had just been in a meeting (which I'm assuming accounted for her urgent manner) and also conveyed to me the message that they said I was endangering my disability benefits by continuing to send out

121 Several minutes after Christy's call, I realized that this was a wet noodle threat and that there was likely someone at LGS involved. After several more hours of talking with colleagues, Chris Miranda's name was mentioned as someone who could have affected the April Fools Day joke as well as likely being involved in the 477 mapping system of the MF-II program due to his position as a vice president at LGS. Chris also would have been in a position to direct the consistent theme of the harassment (public ostracization as a warning to others) that I have received over the last eight years.

122 I also have reason to believe that when Christy called me on August 31st that there were other people listening to the call and coaching her questions to me. This call lasted approximately 10 minutes and Christy made some unusual comments and questions during the

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that she had spoken with before my meeting.

call. In particular, I was describing the details of my legal situation to her and I said that I might have to pursue the matter as a class action, to which Christy responded ~"and have you contacted any class action firms?". If Christy was coached during this call, it will be easy to prove from electronic logs. One technique I have seen used is to IM the speaker comments during the call. I recall that Christy and I spoke again a couple hours later and she seemed slightly uncomfortable. I remember she gave me the name Holly Anderson as the HR contact

- Later this same day, at approximately 4:00 pm, Tim Mclain, one of the Nokia councils, emailed me saying that he and Sonya (the other Nokia council) were both taking vacation the following week, but that they would set up a meeting with me for the week after that.
- I was at first relieved, but as I thought about this message some more, it occurred to me that this was an extremely odd action to take by Nokia council. I had just learned 1 week earlier that the five years of harassment was not a false advertising scheme, but rather it concerned billions of dollars in tax subsidies and many people could potentially lose many illicit gains. Then five hours earlier at 11:00am, I discovered that LGS was involved and that I knew the main perpetrator and that he lived near me.
- This caused me alarm; after as much trouble as the perpetrators of this scheme had gone to keep me from understanding what had happened to me, it did not seem logical that five hours after I figure out the name of possibly the main perpetrator, that I'm told to sit tight and wait for a week, and they didn't even schedule a follow up meeting. Consequently I continued to email out daily discovery and analysis. I would also like to note that if Nokia council was

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really intending to schedule a meeting after a 7 day wait, they could have sent a second

message to me during the following 5 day period.

5 Sept

126 I was continuing to discuss this matter with colleagues and developing further discovery

through Weds of the following week when my corporate laptop was disabled and my badge

access canceled. This occurred while I was in the building complex at Naperville. I had gone in

to work to discuss this matter with several people, proposing the possibility that I return to work

into the Wireless division in a capacity related to the Shannon project. It was on this day that I

first discussed possible FCC spectrum auction gaming and the name Pioneer Telecom was

mentioned to me. When I left the building, my badge beeped as normal, but a door alarm went

off when I exited. When I got home, my laptop would no longer allow me to log in.

126a Pareto lists of monthly payments to the top cacm and acam entities. Pioneer telecom of

OK is the second highest subsidized acam entity and began receiving approximately \$1M more

per month in total USF subsidies after Ajit Pai turned on the acam sub program.

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CACM	SPECTRA COMMUNICATIONS GROUP LLC DBA CENTURYLINK	6243952	ACAM	EAST OTTER TAIL TEL	1872247
CACM	PACIFIC BELL	5020036	ACAM	PIONEER TEL COOP INC	1686769
CACM	CENTURYTEL - MW - KENDAL	4615382	ACAM	UTELCO INC	1639485
CACM	QWEST CORP-MN	4582929	ACAM	GREAT PLAINS COMMUN	1534630
CACM	SO CENTRAL BELL-MS	4147716	ACAM	BLACKFOOT TEL - BTC	990641
CACM	SOUTHWESTERN BELL-TX	3586535	ACAM	MID-RIVERS TEL COOP	855172
CACM	FRONTIER COMMUNICATIONS OF THE SOUTHWEST	3172902	ACAM	HIAWATHA TEL CO	724989
CACM	CITIZENS-FRONTIER-WV	3172361	ACAM	UBTA-UBET COMM INC.	716318
CACM	FRONTIER-DEPUE	2584792	ACAM	WEST CAROLINA RURAL	796581
CACM	RHINELNDER - FRONTIER	2581976	ACAM	UPPER PENINSULA TEL	637504
CACM	SO CENTRAL BELL-KY	2580212	ACAM	NEW ULM TELECOM INC	637350
CACM	MICHIGAN BELL TEL CO	2479223	ACAM	GRAND RIVER MUT-MO	617351
CACM	ITS - IOWA TELECOM	2389386	ACAM	TELLICO TEL CO	611694
CACM	SO CENTRAL BELL LA	2325633	ACAM	WIKSTROM TEL CO INC	589023
CACM	CITIZENS-FRONTIER-MN	2295947	ACAM	WESTERN NEW MEXICO	587213
CACM	OWEST CORP-CO	2289095	ACAM	FRANKLIN TEL CO - MS	577482
CACM	SO. CENTRAL BELL -TN	2178155	ACAM	ALASKA TEL CO	55986B
	SOUTHERN BELL-GA		ACAM	CENTRAL TEXAS CO-OP	556651
CACM		2112100	ACAM	DOBSON TEL CO	515436
CACM	WINDSTREAM GA COMM	2072317	ACAM	TRI-COUNTY TEL CO-AR	494220
CACM	QWEST CORP-WA	2034407	ACAM	THE CHILLICOTHE TEL	472761
CACM	SO CENTRAL BELL-AL	1930148	ACAM	BLUE EARTH VALLEY	461863
CACM	FRONTIER NORTH INC.	1910654	ACAM	ARVIG TEL CO	442884
CACM	FRONTIER OF INDIANA	1981257	ACAM	CENTRAL UTAH TEL INC	439868
CACM	FRONTIER-MICHIGAN	1811155	ACAM	ETEX TEL COOP INC	428140
CACM	WINDSTREAM LEXINGTON	1798082	ACAH	MARK TWAIN RURAL TEL	480608
CACM	SOUTHWESTERN BELL-AR	1779236	ACAM	NEBRASKA CENTRAL TEL	398990
CACM	WINDSTREAM SUGARLAND	1771733	ACAM	POTTAWATOMIE TEL CO	395920
CACM	CENTURYTEL - ARKANSAS	1646792	ACAM	HAVILAND TEL CO	376692
CACM	ACS OF ANCHORAGE	1641184	ACAM	CAMDEN TEL & TEL CO	370822
CACM	SOUTHWESTERN BELL-KS	1578531	ACAM	COLORADO VALLEY TEL	370304
CACM	QWEST CORP-IA	1491157	ACAM	ARMSTRONG TEL. CO.	365602
CACM	FRONTIER COMMUNICATIONS NORTHWEST INC.	1484044	ACAM	RANGE TEL COOP-MT	356399
CACM	OWEST CORP-OR	1479992	ACAM	CONSOLIDATED TEL CO	356001
CACM	NORTHERN NEW ENGLAND TELEPHONE OPERATIONS LLC	1472152	ACAM	PIONEER TEL COOP	354581
CACM	INDIANA BELL TEL CO	1464732	ACAM	PINELAND TEL COOP	345475
CACM	FRONTIER-AUSABLE VAL	1450531	ACAM	BAY SPRINGS TEL CO	343769
CACM	CENTURYTEL-AL-NORTH	1440834	ACAM	JAMES VALLEY COOP	334348
CACM	FRONTIER COMMUNICATIONS CORPORATION	1381411	ACAM	OKLAHOMA WESTERN TEL	334120
CACM	UTC OF KANSAS	1375111	ACAM	PEOPLES TEL CO	333520
CACM	UTC OF OHIO	1331900	ACAM	CROSS TEL CO	336787
CACM	UNITED INTER-MT-VA	1319986	ACAM	FIVE AREA TEL CO-OP CASCADE UTIL INC	328414
CACM	OWEST CORP-MT	1266302			323745
	OHIO BELL TEL CO		ACAM	UNION TELEPHONE CO	314939
CACM		1233542	ACAM	OKLAHOMA COMM SYSTEM TOTELCOM COMMUNICATIONS LLC	313943
CACM	WINDSTREAM MO	1182326	ACAM	TOTELCOM COMPONICATIONS LLC	312605

I believe that Nokia council knew that they had violated SOX 806 by having Christy deliver the message that I was "endangering my disability benefits by continuing to send out email about an ethics complaint that is closed". Afterwards I received an email and also a paper letter stating that my disability benefits were not in jeopardy after the above threat. Additionally, Christy called the nurse practitioner that I have seen during my disability and told her that my benefits were safe, however also said to her "they said he's making the whole thing up".

128 Following these events, my goal was to write and submit a new ethics complaint.

Without corporate network access I could not find the link to the external ethics complaint site.

Fortunately I was able to send an email to Tracy Couture, one of the Naperville HR

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Ombudsmen, and she supplied me the link. I submitted an earlier version of this document as a new ethics complaint approximately two weeks later [Exhibit I]. This internal complaint makes the demand that the company self report to the relevant government agencies, FCC, DOJ, FTC, CFPB, SEC, etc... I received the reply below on 3 Oct:

Ethics Complaint by Ken Del Signore against Nokia and Lucent Government Services Indox x

× 8 2

Alesia, Joe (Nokia - US/Naperville) <joe.alesia@nokia.com>

C Oct 3, 2018, 11:51 AM

*

to me, Tracy 🕶

Hello Ken -

By way of introduction, I am a Senior Investigations Counsel on Nokia's Business Integrity Group. I was assigned to conduct an investigation of the concerns you raised in September (see your attached complaint). I am writing to inform you that we have concluded our investigation. The evidence does not substantiate the concerns you raised.

If you have any questions or concerns, please feel free to contact me at any time.

Regards, Joe

Joe Alesia Senior Counsel Business Integrity Group, Nokia

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Ken Del Signore <kendelsignore@gmail.com>



to tracy.coutre *

Hello Tracy,

I'm writing with an update to my situation. I'm not sure what else to do. I believe I have uncovered significant anti trust violations in the telecom industry. The Nokia lawyers are complicit in the scheme and have actively tried (unsuccessful) to prevent me from learning the details, including threatening to cut off my disability benefits "if I kept sending email to people about an ethics complaint that is closed."

I've submitted my ethics complaint to multiple federal regulatory agencies including OSHA for the benefits threat. It appears to me that Nokia, LGS, and other telecom companies could be facing significant anti trust fines stemming from this complaint.

For myself, I see three options, go back to NOKIA as a help desk technician and await next RIF sue NOKIA and LGS for harassment and loss of career go back to Nokia and build the Shannon app.

I would prefer the third option and I have stated as much to the Nokia lawyers.

I don't know if there are any remaining ways you can help as the ombudsman, but I'm otherwise out of options. I do not think returning under the conditions that I left would be fruitful, so it looks to me right now like I am being forced into the second option.

PS ironically, while on disability I took the ethics course online. I could annotate a counter example to almost every item discussed in that presentation.

By this time I had learned of the potential OSHA / SOX / DF remedy available to me, therefore following this message, I determined to file an OSHA complaint and proceed with a SOX harassment action. I requested of my manager, the new council Joe, and also Tracy if my laptop could be turned on so that I could fully document my complaint, also telling them that I considered my activity to be a protected activity under SOX. My request was denied by Joe, as a result all dates are approximate. Additionally I sent my initial ethics complaint to multiple federal agencies' tip lines as an email.

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130 Around the third week of Oct, with ~ two weeks left on my short term disability benefits, Christy notified me she had scheduled two 8 hour mental health examinations in downtown Chicago on two weekdays in early November (with a company called "IMX") and that I had to attend and pass this testing in order to return to work. She also told me "don't worry, you will be able to take breaks"

131 I had previously indicated to Nokia council in my second ethics complaint that if they did not remediate the underlying issues with the Shannon project, including self reporting to the government, that I would initiate a federal action. I therefore took this recent IMX testing requirement to be an attempt to dissuade me from returning to work from short term disability. Additionally, it does not seem plausible that Nokia council was hoping I would pass this testing so that I could return to work as a service desk technician (who is not allowed to advance in career). Furthermore, I felt this testing would give Nokia 16 hours of material to use against me in any subsequent federal legal actions, therefore it was my belief that they would have told me I failed the testing regardless of my performance on the tests.

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132: Counts:

1 The harassment between 2010 and April Fools Day 2016 was primarily due to my persistent research interest in optimizing the 3G handoff parameters as described.

2 The motivation for the 2014 harassment at the bicycle meeting was to protect the fraud in the USF program from being uncovered by stopping my independant work on 3rd party measurement systems.

- 3 On Sept 24th 2015, I was demoted as a result of counts 1 and 2.
- 4 On Sept 25th 2015, after I declined the demotion, my email was deleted in an attempt to cover up activities associated with counts 1 and 2.
- 5 The Shannon project was cancelled in Jan 2018 or the reason given in count 2.
- 6 The IMX mental health testing requirement to return to work was meant to dissuade me from returning to my service desk technician job because I would have been able to continue making discovery on this matter with many long term colleagues.

133:	Requested Relief	

 One million hexadecimal dollars; A hexadecimal dollar has a symbolic meaning in computer science as a reward for finding a flaw in a colleague's work, and is equal to two dollars and fifty six cents. The requested value is calculated as 2X damages times Case: 1:20-cv-04019 Document #: 1-1 Filed: 07/09/20 Page 65 of 66 PageID #:100

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5 years of harassment + 50% front pay times 20 years planned future workspan, using

128K annual total approximate compensation.

In this matter, the defendants have used technology against the public interest

and have suppressed the advancement of a subfield of computer science for

what appears to be monetary reasons. This is a most egregious act by

standards typical of human scientific endeavour, although not so much by human

corporate standards. Units of hexadecimal dollars are thus requested for the

symbolic value that this would associate to this matter.

134: Exhibits

link to this document:

https://drive.google.com/open?id=1cMnA6hVafrS7I754ABoKOcozt9MJmXu9eqIv3M_SV7c

Exhibit A: https://drive.google.com/open?id=10kGNYhHi3mU-zB8TmzSOE4FT4ZXGXKWM

Exhibit B: https://drive.google.com/open?id=1O9c4vYagfTY1-srymgdlzNkP017zbMk0

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Exhibit C: https://drive.google.com/open?id=1ZubTSIDnF2hl2XF35cW-AKltgNrnhQY-

Exhibit D: https://drive.google.com/open?id=1X0XMdEfAyyV-NnAy1TkbHW0Js9caUtUK

Exhibit E: https://drive.google.com/open?id=1feCzMFqCGusTwM5XWQKsH7JGs7jBaP-x

Exhibit F: https://drive.google.com/open?id=1zF7RRglVInhN8Z_CDrcrymqCZWRpwSwu

Exhibit G: https://drive.google.com/open?id=1nKCBrsxZGeEuBChxB7Kc5FZxkYAV9 yW

Exhibit H: Shannon design:

https://drive.google.com/open?id=1XaQ QP8aNrCMo3XA75IY6DTweeN3ib00

Exhibit I: Sept 2018 ethics complaint:

https://drive.google.com/open?id=1uMk9RbSe83izK04NSgcyQ-saGzgmTCUiuInoM03OREI

Exhibit J: media analysis of FCC legal challenge

https://drive.google.com/open?id=19uLDVrBASFsr6TPVAZ-aztRKPiCCyQgAolGL P7-2I0

Exhibit K: analysis of 270MB USF monthly payment data file:

https://drive.google.com/open?id=1o-MfXkcYmFpolQpWf7XrDEYjxGbEEeeecDq6_jMhKzU